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# HANDBOOK FOR USE IN THE INSPECTION OF WHOLE-MILK AMERICAN CHEESE UNDER THE FOOD PRODUCTS INSPECTION LAW

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## IMPORTANCE OF NATIONAL STANDARDS AND GRADES FOR CHEESE.

National standards and grades for cheese are fundamental and important from the standpoint of promoting the production of more uniform quality, facilitating wider and freer distribution and increasing consumption.

Producers, dealers, and consumers alike, guided by national standards and grades, will be able to make definite determinations and comparisons of the quality of cheese and ascertain more accurately the extent of defects. Contracts made by dealers with manufacturers and between dealers in distributing trade channels can be based upon definite national grades with higher prices for the higher qualities. There will be freer contracting between buyers and sellers in widely separated markets, for the national standards and grades will provide a uniform basis for determining quality, and buyers will be more independent of the representation of dealers.

Furthermore, national standards and grades will tend to improve the quality of cheese and increase consumption, thereby bettering conditions in the industry. Methods of manufacture will be improved and the value of expert knowledge and skill in manufacturing will be better appreciated. The consumer will be encouraged to buy more cheese because a satisfactory quality will be more easily obtainable.

# HANDBOOK FOR USE IN THE INSPECTION OF WHOLE-MILK AMERICAN CHEESE UNDER THE FOOD PRODUCTS INSPECTION LAW.<sup>1</sup>

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## INTRODUCTION.

Under certain provisions, which for convenience have been designated as the "food products inspection law," contained in "An act making appropriations for the Department of Agriculture for the fiscal year ending June 30, 1923," approved May 11, 1922 (Stat. L., 67th Cong., 1st sess., ch. 217), the United States Department of Agriculture is authorized to inaugurate an inspection service on cheese as a part of the Food Products Inspection Service of the Bureau of Agricultural Economics. The provisions of the law are as follows:

For enabling the Secretary of Agriculture to investigate and certify to shippers and other interested parties the quality and condition of fruits, vegetables, poultry, butter, hay, and other perishable farm products, when offered for interstate shipment or when received at such important central markets as the Secretary of Agriculture may from time to time designate, or at points which may be conveniently reached therefrom, under such rules and regulations as he may prescribe, including payment of such fees as will be reasonable and as nearly as may be to cover the cost for the service rendered: *Provided*, That certificates issued by the authorized agents of the department shall be received in all courts of the United States as prima facie evidence of the truth of the statements therein contained.

The following is a brief summary of the rules and regulations promulgated by the Secretary of Agriculture under the food products inspection law which are applicable to the inspection of cheese.

<sup>1</sup> This handbook was prepared after thorough and careful investigation had been made of the whole subject of present market standards and grades for American cheese. Its practical use in the inspection of cheese under the food products inspection law was kept foremost in mind in its preparation. It is subject to revision as experience in its use and suggestions for its improvement may warrant.



**DIGEST OF RULES AND REGULATIONS PROMULGATED BY THE SECRETARY OF AGRICULTURE, IN OFFICE OF SECRETARY CIRCULAR NO. 160.**

Regulation 1 states the provisions of the food products inspection law and defines terms used in the regulations.

Regulation 2 charges the Chief of the Bureau of Agricultural Economics with the administration of the food products inspection law.

Regulation 3 states where food products offered for interstate shipment may be inspected and gives a list of markets which have been designated by the Secretary as important central markets in which food products may be inspected. An inspection service on cheese will be established in the following cities: Boston, New York, Philadelphia, Chicago, Washington, Fond du Lac, and San Francisco.

Regulation 4 specifically designates fruits, vegetables, poultry, butter, cheese, and hay as perishable farm products which may be inspected under this law, when inspection facilities therefor are available.

Regulation 5 provides that an application for inspection may be made by anyone having a financial interest in the products involved. Such application may be made in writing, by telegraph, telephone, or orally. If made orally or by telephone, it must be confirmed in writing. The application shall include the name and address of the applicant or person making the application in his behalf, and of the shipper and receiver, the shipping point and destination, date of shipment, and of actual or expected arrival, if known, the kind and quantity of food products involved, the car initials and number, name of the delivering carrier, the place where the products are located, and the purpose for which the inspection is desired.

Regulation 6 provides that the products be made accessible for inspection; that no inspector shall inspect a shipment in which he is financially interested; and that an inspector, when authorized, may make an inspection on his own motion and issue a certificate to the shipper or any other interested party.

Regulation 7 provides for issuing certificates setting forth the results of the inspection and for telegraphing or telephoning such information to the applicant when so requested.

Regulation 8 provides for reinspection, except when the reasons for a reinspection are frivolous or unsubstantial or the product has undergone substantial change, or when the regulations have not been complied with.

Regulation 9 fixes the fees to be charged for inspection when made upon application. The fees for cheese inspection, for each separate lot, are as follows:

- (a) When each separate factory vat number is not indicated by number or otherwise on the packages:
- |  |         |
|--|---------|
| For 25 packages or less.....   | \$1. 00 |
| For more than 25 packages but not more than 50 packages.....                       | 1. 50   |
| For more than 50 packages but not more than 100 packages.....                      | 2. 00   |
| For more than 100 packages but not more than 200 packages.....                     | 2. 50   |
| For each additional 100 packages or fraction thereof, an additional amount of..... | .50     |
- (b) When each separate factory vat number is indicated by numbers or otherwise on the packages:
- |   |       |
|---|-------|
| For 7 vats or less.....   | 1. 00 |
| For each additional vat number beyond 7, an additional amount of..... | .10   |

#### CONDITIONS RELATING TO THE INSPECTION OF CHEESE.

In the early history of the American cheese industry, before modern transportation and cold-storage facilities were available, the season's production was kept in curing rooms at the factories and was not marketed until after it had been well cured. It was generally impracticable then to market freshly made cheese in its "green" or unripened state.

Under present conditions marketing methods have changed and wholesale cheese dealers in the producing sections and distributing markets have provided facilities superior to those at factories for holding cheese during the process of curing or ripening. Accordingly, the practice of curing cheese at factories has been gradually discontinued and cheese is now marketed by the factories and often by country dealers in a fresh or unripened state. It is obvious that dealers who handle this cheese at country warehouse points and in the wholesale and consuming markets must be able to judge the quality both of fresh and ripened cheese if they are to furnish their trade with the quality required.

The unstandardized methods of manufacturing and the varying quality requirements of different markets have resulted in a lack of uniformity in the judging of quality. In the absence of national standards and grades, commercial inspections have been based chiefly upon the personal preference or opinion of the judge or inspector, and the special or particular requirements or preferences of the market for which or in which the inspection is made. The finer distinctions in quality generally have been given minor consideration and ordinarily cheese having a firm body, either a close, medium close, or medium open texture, a mild or sharp clean flavor, the desired color and good finish has been considered of "good" to "fancy" quality. The preference in body and color in various consuming markets has differed to a marked degree. In certain markets a cheese having medium firm body and open texture can be sold more readily and at a higher price than a cheese of equal quality having a firm body and close texture. Practically the same conditions prevail in the color requirements of different markets. Not

infrequently different prices have been paid in the same market for cheese of the same quality which differed only in the degree of flavor due to the age or degree of ripening. It is obvious that with such conditions existing the inspection certificate on a lot of cheese, to be of definite use and value to buyers and dealers, should not only state the score but also fully describe all the characteristics which determine certain market preferences, such as approximate degree of flavor (mild or sharp), color, and character of texture and body.

#### STYLES OF AMERICAN CHEESE.

American Cheddar cheese is made and marketed in several styles or shapes known commercially as Cheddars, Flats (single or twin), Daisies (single, double, or triple), Young Americas, Squares, and Long Horns. The required characteristics given herein for the various grades or qualities are applicable to all of these styles of American Cheddar cheese made from whole milk. Skimmed and part-skimmed (milk) cheese, and cheese prepared from these styles, such as the tinned and sandwich brick, require a different quality standard.

The approximate dimensions of the various commercial styles of American cheese, their approximate weight and the number packed per box when marketed commercially are given below:

Style.	Diameter.	Height.	Weight.	Number packed per box.
	<i>Inches.</i>	<i>Inches.</i>	<i>Pounds.</i>	
Cheddar.....	14½	12	65-66	1
Flats (single or twin).....	14½	5½	30-33	1 or 2
Daisies (single, double, or triple).....	13½	4	20-25	1, 2, or 3
Young Americas.....	7	7	10-11	4
Long horns.....	4	12	12-13	4

#### CLASSIFICATION OF AMERICAN CHEESE FOR PURPOSE OF INSPECTION.

In the inspection of cheese, it is desirable to indicate certain characteristics which are not obvious from the score or grade of the cheese. For this purpose, the following classification shall be employed:

- (1) The age or degree of flavor developed as a result of ripening;
- (2) The character of the cheese with reference to its texture and degree of firmness;
- (3) The degree of color.

This classification shall be used independently of the quality of the cheese as indicated by the score.

#### CLASSIFICATION BASED UPON AGE OR DEGREE OF FLAVOR.

*Fresh.*—Cheese which is newly made and which has not been ripened or cured shall be termed "fresh" cheese.

*Mild.*—Cheese which is partly ripened or medium cured and has developed a mild flavor shall be termed "mild" cheese.

*Aged.*—Cheese which is fully cured or ripened and has a well-developed sharp flavor shall be termed "aged" cheese.



CLASSIFICATION BASED UPON TEXTURE.

*Close.*—Cheese which is firm and compact in structure with practically no openings in the body of the cheese shall be termed “close” texture cheese.

*Medium close.*—Cheese which is fairly firm and compact in structure and shows moderately few openings shall be termed “medium close” texture cheese.

*Open.*—Cheese which is open in structure and shows numerous or large openings shall be termed “open” texture cheese.

CLASSIFICATION BASED UPON COLOR.

*Uncolored.*—Cheese to which no coloring has been added shall be termed “uncolored.” It may be very pale straw or cream white in color.

*Medium colored.*—Cheese showing a degree of color not higher than a deep shade of dark straw shall be termed “medium colored.”

*High colored.*—Cheese of a reddish shade or extremely highly colored shall be termed “high colored.”

OUTLINE CHART OF CLASSIFICATION OF AMERICAN CHEESE ACCORDING TO FLAVOR, TEXTURE, AND COLOR.

Flavor.	Texture.	Color.
<p><b>FRESH.</b></p> <p>Newly made cheese which has not been ripened or cured.</p>	<p><b>CLOSE.</b></p> <p>Firm, compact structure with practically no openings in body of cheese.</p>	<p><b>UNCOLORED.</b></p> <p>Very pale straw or cream white in color.</p>
<p><b>MILD.</b></p> <p>Partly cured, showing “mild” cheese flavor.</p>	<p><b>MEDIUM CLOSE.</b></p> <p>Fairly firm compact structure with moderately few openings in body of cheese.</p>	<p><b>MEDIUM COLORED.</b></p> <p>Color not higher than a deep shade of dark straw.</p>
<p><b>AGED.</b></p> <p>Aged and fully cured or ripened, showing well-developed sharp flavor.</p>	<p><b>OPEN.</b></p> <p>Open in structure and may show large or numerous openings throughout body of cheese.</p>	<p><b>HIGH COLORED.</b></p> <p>Extremely high color or reddish shade.</p>

## BASIS OF DETERMINING QUALITY OR SCORE OF CHEESE.

The quality of American Cheddar cheese shall be determined by definition and indicated by a score with maximum ratings given to the various factors as follows:

Flavor.....	30
Body and texture.....	40
Finish and appearance.....	20
Color.....	10
Total.....	100

## THE FACTOR OF FLAVOR.

In the inspection of cheese, flavor must be considered from the standpoint of degree and quality. A newly made cheese does not have a well-developed flavor and aroma. Normally it has a raw-curd taste and therefore is classed as "fresh" cheese. A cheese that has been held in the curing room for some time and has a moderately developed "nutty" flavor is classed as "mild," and cheese which has considerable age and has ripened more fully and has a more fully developed flavor or rather sharp taste is classed as "aged" cheese. The degree of flavor is described as "fresh," "mild," or "aged," according to the extent of its development.

It is very important that the degree of flavor be determined and stated on the certificate, for the demands of consumers of cheese in different markets and even in the same market differ greatly in respect to the degree of flavor or ripening desired. Some consumers desire a fresh or very mild flavored cheese, while others desire an aged cheese in which a sharp cheese taste is distinctly developed. Cheese which has developed a characteristic cheese flavor and does not possess a raw-curd taste receives the same rating for flavor, whether it be "fresh," "mild," or "aged," provided it is clean and pleasing. The degree of flavor, except in fresh cheese, is not noted for the purpose of determining the score or grade, but rather for the purpose of identifying the character of the flavor, so that its mildness or sharpness may be indicated.

The quality of the flavor of cheese may be classified from the standpoint of palatability under five general groups: "Highly pleasing," "desirable," "slightly objectionable," "objectionable," and "poor." The total score of cheese shall be limited by the characteristics of the factor of flavor, as follows:

*Highly pleasing flavors.*—Required in cheese scoring 95 to 100, inclusive. An especially fine, clean flavor and aroma, very fully developed, and especially pleasing to the taste and smell. Such flavor characteristics are indicative of the highest qualities and shall be required in cheese scoring 95 points or more.

*Desirable flavors.*—Required in cheese scoring 92 to 94, inclusive. An absolutely clean flavor which may be lacking somewhat in highly pleasing characteristics. Such flavors are characteristic of fresh, mild, or aged cheese of fine quality and shall be required in cheese scoring 92 to 94 points.

*Slightly objectionable.*—Permitted in cheese scoring 89 to 91, inclusive. Undesirable flavors, such as "barny," "cowy," "frosted feed," "weedy," or "heated" when only slightly developed are permitted in cheese scoring 89 to 91. A "barny" flavor or taint in cheese suggests the odor often present in cow stables. "Cowy" is a term used to designate a slight taint of animal odor. "Weedy" refers to a flavor or odor characteristic of various weeds or grasses that are found in pastures at certain seasons. "Frosted feed" is the flavor of frozen feed. This flavor is common in cheese made in the late fall and winter. "Heated" flavor is common during the summer season.

*Objectionable flavors.*—Permitted in cheese scoring 86 to 88, inclusive. These include flavors objectionable to the taste, but not developed to the extent that they are distinctly disagreeable. Such flavors as "barny," "cowy," "weedy," and "frosted feed," when distinctly developed, are common to cheese of this quality; also such flavors as "fruity," "acidic," and "bitter" when only slightly developed. "Fruity" is a sweetish taste that suggests the flavor of aromatic fruit, such as over-ripened pineapple. "Acidic" is a sharp acid taste. "Bitter" flavor is suggested by a "bity" taste.

*Poor (off) flavors.*—Limit the score to 85 points or less. Poor (off) flavors, include all objectionable flavors which have developed to the extent that they are distinctly disagreeable to the taste. They are common to cheese of low quality and include such flavors as "unclean," "gassy," "pronounced acidic," "stale sour," "rank bitter," "stale fruity," and "rancid." An "unclean" flavor as a rule is accompanied by a disagreeable or offensive odor and a fermented or gassy condition in the cheese. "Pronounced acidic" and "rank bitter," as the terms indicate, are acidic and bitter flavors which are very distinctly developed and disagreeable to the taste. "Rank bitter" flavor is common in cheese that is gassy or yeasty and has narrow elongated slits or "fish-eyed" openings throughout. "Stale sour" flavor is the taste of sour curd or whey. "Rancid" is a flavor associated with the very poorest quality, which suggests previous decomposition and produces a choking sensation to the taste.

#### THE FACTOR OF BODY AND TEXTURE.

The term "body" as applied to cheese refers to the degree of firmness of the cheese as a whole and its general consistency; the term "texture" refers to the character of its structure.

The general appearance of the plug will show the nature or character of the texture; i. e., whether it is "close," "medium close," or "open"; also the presence or absence of pinholes or other gas openings. By rubbing a portion of the cheese between the thumb and fingers it will show the nature of the body of the cheese and indicate readily any of the following characteristics:



"Solid" or "firm," "medium firm," "soft," "silky," "smooth," "waxy," "stiff" or "corky," "mealy" or "crumbly," "dry," "watery," "weak," "pasty" or "salvy."

Various methods of manufacture for different market requirements in certain sections of this and other countries have resulted in the production of American cheese of varying degrees of closeness or openness of texture and of firmness; also in the presence or absence and character of openings in the body of the cheese. Openings due to conditions in the matting and pressing of the curd during the manufacturing process are termed "mechanical" openings. These are irregular in shape and unless so numerous or so large as to weaken the body they have no important relation to the flavor or quality of the cheese.

When the openings are caused by the development of gas through bacterial action they are termed "pinholes," "Swiss" holes or "fisheyes," according to their size and shape. Such openings may be distinguished from mechanical openings by their regular shape and their smooth, glossy surface. Cheese is termed "gassy" when gas holes are numerous. As a rule such cheese is soft and spongy. When the flat sides are more or less bulged the cheese is spoken of as "huffed" or "bloated." Unlike mechanical openings, gas holes have a direct relation to the quality of cheese and a gassy condition is usually indicative of poor quality. As a rule it is accompanied by a disagreeable odor.

"Pinholes" are gas openings usually spherical in shape about the size of a pin head. "Swiss" holes are gas openings larger than "pinholes" and are usually spherical in shape. It is sometimes difficult to distinguish "Swiss" holes from mechanical openings when they are not numerous and not uniformly circular in shape. When "Swiss" holes are few in number they are not as a rule accompanied by any objectionable flavor or aroma. "Fish-eyed" is a term used to describe a gas opening in which the holes have been flattened, making elongated or slitlike openings.

A "mealy" or "crumbly" condition in cheese is a defect usually resulting from an overacid development of the curd during manufacture. It is indicated by the crumbling or breaking of the cheese into small particles when crushed in the hand.

Cheese may be termed "stiff" or "corky" when it is hard and tough or overfirm and is not pliable or does not readily break down when pressed in the hand.

Cheese, to receive the maximum rating of 40 points for body and texture, shall be smooth and silky, slightly translucent, meaty and waxy, free from gas holes or any tendency to mealiness or pastiness, and must not be sticky, rubbery, or corky. The rating of body and



texture, also the maximum score of cheese showing certain characteristics of body and texture shall be limited as follows:

*Close texture.*—Cheese that is classified as of "close" texture and has a firm, compact structure, is solid boring, and shows practically no openings other than possibly some slight mechanical breaks appearing as lines in the cheese, is commonly known in the markets as "export," because it is particularly suited for export, especially to the English market. It shall not be limited in its total score by reason of its classification as to texture.

*Medium close.*—Cheese that is classed as of "medium close" texture and has a fairly firm compact structure, is smooth boring, and has moderately few openings shall not be limited in its total score by reason of its classification as to texture. Such cheese, except in the case of freshly made cheese, may be smooth, silky, and waxy when pressed firmly between the thumb and fingers, also pliable and give a velvetlike feeling to the touch. Cheese of "medium close" texture should be slightly translucent. This may be noted by holding the plug before the light, when it will appear permeated with diffused rays of light.

Gas holes are given the same consideration as mechanical openings in the classification of cheese as to texture. However, in determining the rating to be given body and texture, the presence of moderately few mechanical openings in a "medium close" cheese is not considered a defect, requires no cut in the rating, and does not limit the total score, while the presence of gas holes is considered a defect, limits the total score, and requires a cut in the rating for body and texture, the extent of which depends upon their character, size, and number.

*Open texture.*—Cheese that is classed as "open" texture and has a reasonably firm but open structure, is fairly free from pastiness, has large or numerous openings, and draws a full plug shall not be limited in its total score by reason of its classification as to texture. (See p. 12, "Determination of total score.")

In the practical application of these rules cheese classed as "open" shall include the softer and more open type of American cheese. When such cheese has the proper firmness of body to meet the requirements and is not otherwise defective, it shall be given the maximum rating for body and texture. Only when such cheese, because of too high a moisture content or for other causes shows a weak or pasty body or has too many openings or shows gas holes shall it be graded below 92 score, unless the other factors fail to meet the requirements of that score.

Pastiness is indicated by a salvy condition or the adherence of the cheese to the back of the trier as a smear or to the fingers in handling.

#### THE FACTOR OF FINISH AND APPEARANCE.

A neat, uniform, smooth finish gives cheese a more attractive appearance and adds to its market value. The bandage must be clean, smooth, dry, and close fitting. Before cheese is stored it should be properly paraffined with a thin, even coating over the entire surface. No cut should be made in the rating for finish if the cheese is not paraffined, but the fact that it is not paraffined should

be stated on the inspection certificate. A cheese has defective finish if it is misshapen, improperly paraffined, or shows checks, cracks or holes, soft or watery spots in the rind, uneven surface, or an irregular or poorly fitted bandage. The box or containers should be clean, sound, uniform, and fairly close fitting. However, the package should not be so close fitting that it is difficult to remove the cheese from it. Where more than one cheese is placed in a package they should be uniform in size and shape.

Cheese to be given the full rating of 20 points for finish and appearance must be uniform in size and shape and be covered with a clean, close, smooth-fitting bandage, be free from mold, and have perfect shape, square edge, sound rind, and dry, closed surfaces.

#### THE FACTOR OF COLOR.

Different markets vary greatly regarding the color desired in cheese. These requirements vary from uncolored cheese to cheese with comparatively high color. In order to meet these different requirements for color in cheese of the same character and quality, the rules for inspection provide that a maximum rating of 10 points for color shall be given when cheese is uncolored, or medium colored, provided that the cheese is otherwise free from color defects. Cuts are made in the rating of cheese for "white specks," "waves," "streaks," and "mottles"; also when the cheese is "acid cut," "bleached," or "faded," and "seamy." The color is termed "acid cut" when it is faded or color bleached resulting from an excess acid condition in the cheese. "Seamy" is a color defect indicated by the outlined surface of the separate portions of curd which were pressed together in the making of the cheese. Wavy color is an unevenness of color which appears as layers or waves. Mottles are irregular-shaped spots or blotches in which portions are light colored and others are higher colored. Streaks are alternate light and higher colored portions which appear as streaks.

The rating of color and maximum score of cheese showing certain characteristics of color shall be as follows:

*Uncolored*—Cheese that is uncolored and free from imperfections in color shall be given the full rating of 10 points for color and shall not be limited in its total score.

*Medium color*—Cheese having not more than a deep shade of dark straw color which is otherwise free from imperfections in color shall be given the full rating of 10 points for color and shall not be limited in its total score.

*High color*—Cheese having extremely high or reddish color shall be limited to a total score of 91 points or less, according to the degree of high color, and shall be rated for color accordingly. (See "Determination of total score," p. 12.)

# REQUIRED CHARACTERISTICS OF CERTAIN SCORES OR GRADES.

The quality of cheese shall be designated by score or grade and the standard for each 3-point range of score shall be defined by certain characteristics which shall be considered essential to cheese within each range of score. The characteristics or quality requirements for each score range or grade shall be as follows:

1. *Cheese scoring 95 and above:* U. S. Extra Fancy.—Shall be of very fine, clean flavor, mild or aged cheese with a highly pleasing flavor and aroma, very fully developed and pleasing to the taste and smell. The body and texture may be close, medium close, or open without gas holes, smooth, silky, and slightly translucent, meaty and waxy. In finish and appearance it must be of uniform size and perfect shape, with even, dry, closed surfaces, square edges, must be well dressed, neat and clean, without cracks or checks, and free from mold. It may be uncolored or medium colored, but must be uniform, even, and free from defect in color.

2. *Cheese scoring 92 to 94, inclusive:* U. S. Fancy.—Shall be of fine, clean, desirable flavor, if mild or aged, and clean and desirable in flavor if fresh. The body and texture may be close, medium close or open; it must have a good body if fresh and must be smooth and meaty if aged; it must be practically free from "Swiss holes" and entirely free from "pin holes." In finish and appearance it must be uniform in size and shape, with even, dry, closed surfaces, square edged, well dressed, neat and clean, without cracks or checks, and fairly free from mold. It may be uncolored or medium colored, uniform and even, with only very slight defects.

3. *Cheese scoring 89 to 91, inclusive:* U. S. No. 1.—Shall be of good flavor, fresh, mild, or aged. It may be somewhat lacking in flavor or may show slightly objectionable flavors, such as slight "barny," "cowy," "frosted-feed," "weedy," or "heated," but must be fairly clean in flavor. The body and texture may be close, medium close, or open. It must have fairly good body if fresh and be fairly meaty and smooth if aged. It may show a few "Swiss holes" but must be practically free from "pin holes." The finish and appearance shall be fairly uniform, well dressed, fairly clean, and sound, with even, dry surfaces, free from cracks or checks, and reasonably free from mold. It may be uncolored, medium colored or high colored, fairly uniform, and fairly even, with only slight waviness.

4. *Cheese scoring 86 to 88, inclusive:* U. S. No. 2.—Shall be fair in flavor, fresh, mild, or aged. It must be reasonably clean in flavor but may show objectionable flavors, such as "barny," "cowy," "frosted-feed," "weedy," "heated," or "slightly developed acidity," "fruity," or "bitter" flavors. It must be free from any flavor that is distinctly disagreeable to the taste. The body and texture may be close, medium close, or open. It must have a reasonably good body if fresh and be reasonably meaty and smooth if aged. It must draw a full plug and not be spongy and gassy, but may show a few pin holes. It may show a slightly corky body and slightly crumbly or slightly pasty texture. It must be reasonably uniform in size and shape, with fairly smooth, even surfaces, reasonably dry and reasonably sound, without open cracks or soft rot spots in rind.



It may be uncolored, medium, or high colored, reasonably uniform and reasonably even, but may be slightly mottled, slightly streaked, or show very slight acid cut.

5. *Cheese scoring 83 to 85, inclusive:* U. S. No. 3.—May be poor in flavor, fresh, mild, or aged, showing "off" flavors which are disagreeable to the taste and smell, such as distinctly developed "acid," "sour," "bitter," "fruity," or "unclean," flavors. The body and texture may be close, medium close, or open, and ragged boring or otherwise defective as pasty, mealy, crumbly, corky, or gassy. In finish and appearance it may be irregular in size and huffed or misshapen, also show open cracks or holes in the rind and soft rot spots. The color may be irregular, extremely high, badly mottled, streaked, or distinctly acid cut.

6. *Cheese scoring below 83:* Culls.—May be very poor in flavor, fresh, mild, or aged. It may show pronounced "off" flavors which are very disagreeable to the taste, such as pronounced acidity, bitter, fruity, or unclean flavors. The body and texture may be close, medium close, or open, and may be ragged boring, spongy, or gassy, or otherwise very defective, such as pasty, mealy, crumbly, or corky. In finish and appearance it may be very irregular in size or shape and very defective, such as open or huffed surfaces, with soft rot spots and cracks or holes in rind. The color may be very irregular, extremely high, streaked, very badly mottled, acid cut, and faded.

#### DETERMINATION OF THE TOTAL SCORE.

In the inspection of cheese under the food products inspection law the final score shall be determined within certain limits by definition of required characteristics for certain scores and by use of the score basis of rating the various factors according to the characteristics shown and relation of the maximum ratings of each factor to the total maximum score of 100. To illustrate: A cheese which shows distinctly developed acidity flavor, mealy and crumbly body and texture, and shows an acid-cut faded color is limited to a maximum score of 85 points, since cheese having any of these defects must not be scored above 85 points. A total score of 85 on such a cheese necessitates a total cut of 15 points in the combined ratings for flavor, body and texture, and color, if no defects are shown in finish and appearance, for which a rating of 20 points is given for perfect.

In properly distributing this cut of 15 points, a cut should be made in the rating of each factor proportionate to the maximum rating of each factor. The maximum ratings of these factors being 30, 40 and 10, respectively, cuts should be made in approximately the same ratio, or 6, 7, and 2, respectively. The final ratings of each factor would be as follows: Flavor 24; body and texture 33; finish and appearance 20; color 8; giving a total score of 85.

Again, a cheese which shows pinholes is limited to a maximum score of 88 points. If the flavor is clean and therefore "desirable" but is not "highly pleasing" the rating for flavor would be limited



CHART OF CHARACTERISTICS REQUIRED FOR CERTAIN SCORES AND GRADES.

Quality factor.		Score 95 and above. U. S. Extra Fancy.	Score 92 to 94, inclusive. U. S. Fancy.	Score 89 to 91, inclusive. U. S. No. 1.	Score 86 to 88, inclusive. U. S. No. 2.	Score 83 to 85, inclusive. U. S. No. 3.	Score below 83. Culls.
Flavor.....	30	Very fine clean flavor, mild or aged. Highly pleasing flavor and aroma; very fully developed and especially pleasing to the taste and smell.	Fine flavor, fresh, mild or aged; clean and desirable flavor if mild or aged and clean in flavor if fresh.	Good flavor, fresh, mild or aged; fairly clean, but may be lacking in flavor; may show slightly objectionable flavor, such as slightly developed, frosted, weedy, heated, barny, or cowy.	Fair flavor, fresh, mild or aged; must be reasonably clean in flavor. May show objectionable flavors such as frosted, weedy, barny, cowy, or heated, or a slightly developed acid, bitter, or fruity flavor.	Poor flavor, fresh, mild or aged. Off flavors disagreeable to the taste permitted. May show distinct acidity, bitter, sour, fruity, or unclean flavors.	Very poor flavored cheese, fresh, mild or aged. May show pronounced off flavors, very disagreeable to the taste, such as pronounced acidity, rank, bitter, sour, fruity, stale, unclean or rancid.
Body and texture.....	40	Close, medium close, or open texture. Must be smooth and silky, slightly translucent, meaty and waxy, without gas holes.	Close, medium close, or open texture. Must be good body if fresh, smooth and meaty if aged. Practically free from Swiss holes and entirely free from pin holes.	Close, medium close, or open texture. Fairly good body if fresh, fairly meaty and smooth if aged. May show a few Swiss holes but must be practically free from pin holes.	Close, medium close, or open texture. Reasonably good body if fresh, and smooth if aged. Must draw a full plug. May show a few pin holes and be slightly corky, slightly crumbly, or slightly pasty.	Close, medium close, or open texture. May be defective, somewhat ragged, pasty, crumbly, corky, or gassy.	Close, medium close or open. May be very weak, ragged, pasty, crumbly, corky, gassy, or spongy.
Finish and appearance.....	20	Uniform in size, perfect in shape, even, dry, close surfaced, soft edges, without cracks or checks, and free from mold.	Uniform in size and shape with even, dry, close surfaced, faces squared, well dressed, meaty and clean, without cracks or checks, and fairly free from mold.	Fairly uniform in size and shape, even, dry surfaced, well dressed, fairly clean and sound without cracks or checks, and reasonably free from mold.	Reasonably uniform in size and shape, fairly smooth surfaced, dry and reasonably sound without open cracks or rot spots in rind.	May be irregular in size and shape, each showing defects as open cracks, rind holes, soft rot spots, buffed or misshapen.	May be very irregular in size and shape, and with defective, buffed surfaces, soft rot spots, and cracks or holes in the rind.
Color.....	10	Uncolored or medium colored. Uniform and even and free from defect.	Uncolored or medium colored. Uniform and even.	Uncolored, medium high colored. Fairly uniform and fairly even, with only slight waviness.	Uncolored, medium colored, high colored. May be slightly streaked or very slightly acid cut.	May be irregular, badly mottled, streaked, or distinctly acid cut.	May be very irregular, extremely high, mottled, streaked, or badly acid cut, or badly faded.

to a cut of 6 points and a maximum rating of 24 points. But as total cuts of 12 points must be made to reduce the score to 88, a cut of 6 points should be made in the rating of body and texture, giving final ratings of each factor as follows: Flavor, rating 24 (6-point cut); body and texture, rating 34 (6-point cut); finish and appearance, rating 20 (no cut); color, rating 10 (no cut); total score, 88.

#### PROPER CONDITIONS FOR INSPECTION OF CHEESE.

Cheese should be examined in a place which is well lighted and free from foreign odor. It should not be too cold, as the sense of smell must necessarily be keen to recognize the delicate odors which bear a direct relation to the quality of the cheese and its score. A cold atmosphere dulls the sense of smell, and cheese that is too cold will not show its true characteristic flavor, body, or texture. When cheese is too cold, the flavor and aroma is less in evidence or apparently lacking, while the body is overfirm and the texture inclined to be brittle. The same cheese when heated or held at too high a temperature is likely to show an abnormal development of flavor and aroma and any tendency to softness or pastiness of body is accentuated, resulting in a lower score than would be given if the cheese were in proper condition for scoring. This indicates the importance of inspecting cheese under proper temperature and light conditions in a place which is free from foreign odors and which permits an accurate determination of the quality and the true score or grade of the cheese.

#### METHOD OF PROCEDURE IN INSPECTION OF CHEESE.

In the inspection of a lot or shipment of cheese its general appearance and "finish" should be noted first. This includes uniformity in size and shape of cheese of the same style, smoothness of surface and neatness of bandage covering the cheese and condition of the rind. Any defects which indicate lack of soundness of the rind should be carefully noted as well as the condition of paraffin and the extent of mold if any is present.

To obtain a portion of each cheese for examination, a special cheese trier is used. The trier should taper slightly toward its lower end. It should be inserted near the center of the flat surface of the cheese and given a half turn, permitting a cylindrical portion of the cheese commonly known as a "plug" to be drawn. In replacing the plug it should be removed from the trier and pressed into its original position, care being taken to close the surface opening as completely as possible to prevent the development of mold where the plug was drawn.

The degree or shade of color and defects if any should be noted. The general appearance and character of the body and texture should

be carefully noted, particularly the presence of openings, if any, their size, extent and exact nature, that is, whether they are gas holes or mechanical openings. The character of the body and texture may be determined by breaking off a portion of the plug and rubbing it between the thumb and fingers, noting carefully its consistency—that is, whether the texture is close and compact, or loose and whether the body is firm and waxy, soft and pasty, rubbery, corky or mealy. As the cheese is pressed or rubbed between the thumb and fingers the flavor characteristics should be noted from the standpoint of (1) degree of flavor as affected by age or extent of ripening and (2) quality characteristics of flavor and aroma which indicates the degree of wholesomeness.

In determining the flavor and aroma of cheese, the inspector must depend largely upon his sense of smell, for the tasting of many samples of various qualities of cheese tends to confuse both the sense of taste and smell. Particles of cheese taken into the mouth do not dissolve so quickly as butter, and are more likely to give a lingering flavor which can not be readily distinguished from the flavor of other cheese tasted earlier. It is best, therefore, to determine the flavor and aroma by noting the character of the aroma or odor that is liberated from a portion of cheese which is pressed and warmed while held in the hand.

#### SELECTION OF PACKAGES TO BE EXAMINED.

The packages to be examined shall be selected by the inspector in such a manner as to be properly representative of the lot. The number of packages selected from a lot (a lot comprising packages covered by the same factory, shipper, dealer, or transportation mark or number) shall be as follows:

When each separate factory vat number is indicated on the package, one package from each vat shall be examined.

When each separate factory vat number is not indicated by number or otherwise on the package:

5 packages shall be examined in lots of 25 packages or less.

8 packages shall be examined in lots of 26 to 50 packages.

10 packages shall be examined in lots of 51 to 100 packages.

15 packages shall be examined in lots of 101 to 150 packages.

20 packages shall be examined in lots of 151 to 250 packages.

In lots of more than 250 packages the number to be examined shall increase by 5 packages for each additional 100 packages or fraction thereof beyond 250. In any case the inspector may examine as many packages as he may deem necessary to establish properly the score.

When the cheese is not in boxes or other containers, each individual cheese shall be considered a package.



**INSPECTION OF CHEESE IRREGULAR IN CLASS OR IN QUALITY.**

In the inspection of a lot which contains cheese of different classes as to (1) degree of flavor or ripening, (2) character of texture, or (3) degree of color, the average score for the lot shall be determined and also the range of score of each separate class shall be noted and the approximate proportion of each class to the lot. For example, if a lot is made up of both "medium close" and "open" cheese, the range in score of each class shall be noted and the proportion of each in the packages examined. Again, where a lot is made up of cheese of varying degrees of color or stages of ripening, part being "fresh" and part "medium" or partly ripened, the minimum and maximum age of the cheese in each class shall be noted, together with the date of paraffining and storage if stated on the package.

The score of a lot of cheese in which the quality varies in the different packages examined shall be the average score of all the packages examined, unless the vat numbers are given when the weighted score of the lot shall be ascertained.

**MARKING CHEESE WITH THE INSPECTION STAMP.**

Unless otherwise instructed by the applicant, each package in a lot inspected and for which a certificate is to be issued shall be stamped by the inspector with the inspection lot number, and date of inspection for purposes of identification, except when such identification is not required. When it is impossible to stamp each package, as in the case of carlots in transit, the boxes of cheese actually examined shall be stamped with the date of inspection, and lot number.

**INFORMATION TO BE GIVEN ON INSPECTION CERTIFICATE.**

In addition to the date of inspection and lot number the inspection certificate shall state the proper class of the cheese as determined by the degree of flavor or ripeness, the character of texture, and the degree of color. The presence or absence of paraffin, condition of paraffin, and condition of package shall also be given. The certificate shall show the date or dates of manufacture, packaging, and storage of cheese when such information is available to the inspector. It shall also show in detail the nature and extent of any defects noted in any of the various factors in determining the score or grade.

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